

Preparing the SDK-51 to Emulate the 8052

Preparing the SDK-51 to emulate the 8052's 16-bit timer and additional RAM is a fairly straight forward task. Once you follow the steps below, you can use the SDK-51 to fully emulate all the features of the 8052 except the additional 8K of internal ROM.

Step 1

Replace the 8051 chip in the SDK-51 with an 8052 chip.

Step 2

Use a PROM programmer to copy the monitor firmware into a buffer or a disk file. The monitor PROM to be changed is the left-hand one of the two-1701HOM set.

Step 3

The SDK-51's standard monitor firmware doesn't allow you to access the 8052's additional RAM using the DBYTE command. If you try to do so, you get the message:

ERR 12 ADDR OUT OF RANGE

To change the allowed range and the method of addressing the extra data RAM, you need to change the monitor routine (I)FETCH/(I)STORE. To do this, change the hexadecimal values of the monitor code you copied in Step 2 from addresses E6AC to E6C9 to:

B4,01,08, 85,45,82, 20,D5,E6,
C1,97,B4, 02,15,E5, 45,30,E7,
F0,F8,20, D5,03,E6, C1,9D,EA,
F6,C1,9D

(The spaces between the groups of hexadecimal numbers are there only to improve readability.)

Figure 2 shows the instructions for the original code at this location and the replacement code.

Step 4

The original monitor software also does a checksum on the two monitor prompts. To make the stored checksum value compatible with the new code, change the value at address E049H to 8D1H.

Step 5

Burn the modified code into a new PROM. Replace the original monitor PROM with the new PROM.

This article is one of several that will appear in the next update of the ICE-51 Technical Report.

Highlighting iRMX-86™ System Booting

Software Support Services has answers for iRMX-86 release 5 users that face complications when attempting to boot their system. This information and other aspects of iRMX-86 is covered in the iRMX-86 Technical Report to be published in Q4/83.

We have explained what is happening as you are booting your system in the chart below. The symptom is described with the associated cause and solution detailed below it. Check each cause carefully to pin-point your actual situation

Symptom: When attempting to boot the system there is disk access, but no console output and no response to keyboard input.

CAUSE

1. Early versions of LIB-86 could produce invalid load files.
2. The 8086 processor is waiting for a response from the 8087 Numeric Data Processor.
3. Automatic bootstrap device recognition does not function when booting from a release 4 FORMATTED disk. The second stage of the bootstrap loader was changed in release 5 to allow for Auto Boot support.
4. The second stage of the bootstrap loader is being overwritten when loading the operating system.
5. The device name in the bootstrap loader does not have a corresponding device name in a DUIB.
- ti. A user job(s) was configured into the system, but the jobs object module was not added into the bootable library. This may commonly occur when using any of the Intel provided definition files for the System 86/3xx series products. The SDB is configured as a user job, but has not been added to the bootable library.
7. There is a conflict over an interrupt, (two interrupts are assigned to the same level).
8. The bootstrap loader does not use interrupts. The iRMX-86 Operating System does use interrupts.
9. In a system configured with the iSBC-544, the dual port RAM on the iSBC-544 board is configured as system memory.
10. The system console is configured for automatic baud rate detection.
11. In a system configured with a user job or a user I/O job, an incorrect start address has been specified.
12. A first level user job has a missing or unexecuted END\$INIT\$TASK system call.
13. A user I/O job has an END\$INIT\$TASK system call.
14. In a system configured with the iSBC-208 board, the I/O base address of the iSBC-208 was changed for release 5.
15. In a system configured with the iSBC-254S Bubble Memory Board, a patch is missing.

SOLUTION

1. Use only LIB-86 version 2.1 or later
2. If the 8087 is not present in the system, be sure the Test Pin (number 23) of the 8086 is tied to ground.
3. Reformat using the release 5 FORMAT command or FILES Utility if necessary.
4. Do not locate the operating system or user written applications in the same physical location as the second stage of the bootstrap loader. Refer to the "Guide to Installing the iRMX-86 release 5 Operating System on System 86/300 Series Microcomputer Systems".
5. Using the ICU, make sure that the device name of the booting device exists in a DUIB. ("WO" for the Winchester disk)
6. Add the user jobs (the SDB) object modules to the bootable library using the LIB-86 command.
7. Check both the board jumpers and the ICU configuration for two interrupts assigned to the same level.
8. Check that the interrupt is actually getting to the 8259A.
9. During configuration (using the ICU), exclude the iSBC-544 memory from the memory made available to iRMX-86 Operating System. Also, if using an 86/330 or 86/380 system, the physical memory must end 16K bytes before the beginning of the iSBC-544 RAM.
10. Press SHIFT U to determine the baud rate.
11. Check the Load and Start Addresses. They are not necessarily the same, especially when using the LARGE model. During ICU configuration, ensure that the start address is specified.
12. Check that all first level user jobs invoke an END\$INIT\$TASK system call
13. User I/O jobs cannot invoke END\$INIT\$TASK system calls.
14. Reconfigure the bootstrap loader EPROM to reflect the release 5 I/O Base Address of 180H.
15. Apply patch number 95. Note that patch number 93 is incorrect and should not be used.

There are improvements in the next revision of the NDS-II ISIS-II (N) User's Guide Supplement that we would like you to know about. One improvement regards a clarification of volume and directory names used in Figure 2-2 (in the present manual) and their corre-

There has been some concern that the ICE-51 does not work properly with the Intel 2187A byte-wide RAM. The problem is not with the ICE-51 or the 2187A; it is a problem with the component family chosen for several 2187 circuits described in the Intel literature.

[illegible]

in the application brief "The Designers Guide to iRAMs", the microcontroller example for the 2187 shows 74S02 and 74S32 parts. As stated above, the use of these parts exceeds the drive capability of ALE. The F family parts, **74F02** and **74F32**, should be used instead.

[illegible]

The information detailed below is a result of some of the Software Performance Reports (SPRs) submitted to Software Support Services, as well as other information we thought would be useful to you. Several situations are outlined below to share the engineering remedies with you.

You'll be pleased to note that the next version of FORTRAN-86 is planned for release in Q4 of 1983.